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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,242	02/27/2007	Remi Pierre Tsiava	Serie 6427	4790

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EXAMINER	
PRICE, CARL D	
ART UNIT	PAPER NUMBER
3749	

NOTIFICATION DATE	DELIVERY MODE
08/11/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/582,242	TSIAVA ET AL.	
	Examiner	Art Unit	
	CARL PRICE	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/28/2011*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to **claims 12-21** have been considered but are moot in view of the new ground(s) of rejection.

Applicant has amended the claims to be of a scope not previously considered. Consistent with applicant's argument that the prior art relied on in the previous office action fail to show, disclose and/or teach certain aspects of applicant's invention now recited in the claims filed on **06/28/2011**, applicant has amended the claims to include at least the following:

Claim * . (Currently Amended)**

Claim 12 (currently amended):

A method of fuel combustion, in which a jet of fuel and at least two jets of oxidizer are injected **from a furnace wall,** the first jet of oxidizer, called the primary jet, being injected so as to be in contact with the jet of fuel and to generate a first incomplete combustion, the gases originating from this first combustion still comprising at least a portion of the fuel, and the second jet of oxidizer being injected at a distance from the jet of fuel in such a way as to combust with the portion of the fuel present in the gases originating from the first combustion, the fuel being a gas or a liquid, the primary jet of oxidizer being divided into two primary jets:

a) a first primary jet of oxidizer, called a central primary jet, injected in a center of the jet of fuel along an axis of the jet of fuel; and

b) a second primary jet of oxidizer, called a sheathing primary jet, injected coaxially around the jet of fuel, wherein the primary jet of oxidizer representing between 2% and 50% of a total quantity of oxidizer combusted.

In response to the prior art of record cited in the previous examiner's action and in support of the scope of the invention now presented in the amended claims, applicant argues the following:

> "First, Applicants repeat the arguments made in their October 14, 2010 Amendment where they argued that the combination of **Kobayashi** with **Chamberland** or **Anderson** **would have resulted in the combustion of coal, not a gaseous or liquid fuel** as claimed." (Bolding and Highlighting added)
>
> "Second, **Kobayashi** and **Chamberland** or **Anderson**, combined in the manner suggested by the Examiner would not have resulted in injection of each of a jet of fuel and at least two jets of oxidant from a furnace wall. The Examiner relies upon Kobayashi to teach the jet of fuel and the at least two jets of oxidizer as claimed before amendment. In particular, **Kobayashi** **teaches injection of a jet of fuel and a jet of oxidizer from a burner on a central furnace wall and injection of two additional jets of oxidant each one of which is injected from a separate furnace wall perpendicular to the central furnace wall**. Thus, **Kobayashi**, in the context of the Examiner's suggested combination of references, teaches injection of jets of oxidant not from a same furnace wall but instead from different furnace walls."

In response to applicant's first argument, the examiner does not agree with applicant's unsubstantiated suggestion that the Examiner's proposed combination would have resulted in a **Kobayashi** with **Chamberland** a combustion of coal, while the claimed subject matter recites a gaseous or liquid fuel. It would have been well within the understanding of one skilled in the art at the time of the invention to substitute known alternative fluid fuels for the fluid coal fuel feed of and operate **US 6978726 (Kobayashi et al)** with alternative fluid fuels, such as natural gas and oil, at least in view of the teaching of **EP 0 748 981 (Chamberland et al)** or **Anderson,** this being further evidenced by **US 6422041 (Simpson et al).**

Regarding the newly added claim recitation "from a furnace wall", it is noted that **US 6978726 (Kobayashi et al)** meet this limitation. The jet of fuel in **US 6978726 (Kobayashi et al) (figure 2**), and end wall, and the at least two jets of oxidizer are injected from a wall. One oxidizer (3, 7) is injected through the same wall as the fuel jet. And, a second jet oxidizer is injected through a wall (at 14). That is, each one of the "jet of fuel and at least two jets of oxidizer are injected **from a furnace wall**". That is, applicant's claim does not state that the jet of fuel and at least two jets of oxidizer are injected from a ***same*** furnace wall, in the manner apparently intended by applicant.

The examiner can not agree with applicant's second argument, that **US 6978726 (Kobayashi et al)**, in the context of the Examiner's suggested combination of references, teaches

injection of jets of oxidant not from a same furnace wall but instead from different furnace walls. On the contrary, applicant's attention is directed to Figure(s) 7a and 7b of **US 6978726 (Kobayashi et al)** which clearly shows jets of oxidant from a same furnace wall portion being aligned with primary air and fuel source ports on the same wall portion.

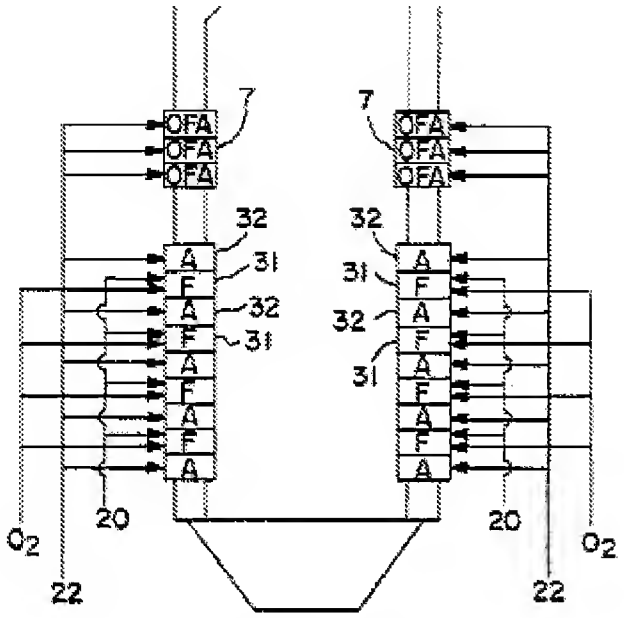


FIG. 7a

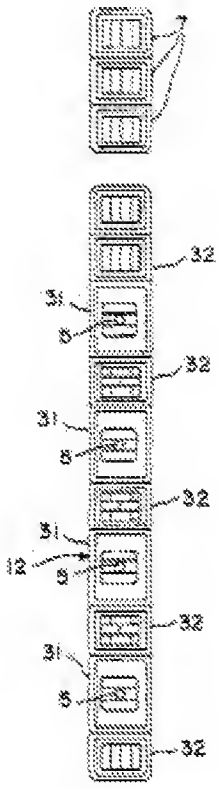


FIG. 7c

Although it is not thought necessary for making a conclusion of obviousness of the claimed invention, the examiner is no relying on the additional prior art references of **US 6422041 (Simpson et al) (of record)** which clearly shows jets of oxidant from a same furnace wall portion being aligned with primary air and fuel source ports on the same wall portion, And wherein the combustion fuel is a liquid or gaseous fuel

Accordingly, while applicant's arguments have been carefully considered, applicant's claims do not patentably distinguish applicant's invention over the prior art of record.

See the examiner's action herein below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims Rejected under 35 U.S.C. 103(a)

Claims 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **US 6978726 (Kobayashi et al), US 6422041 (Simpson et al) (of record)** in view of **EP 0 748 981 (Chamberland et al)** or **US 5439373.**

US 6978726 (Kobayashi et al) shows and discloses a method of fuel combustion, in which:

- a jet of fuel (6) and at least two jets of oxidizer are injected, the first jet of oxidizer, called the primary jet (5, 3), being injected so as to be in contact with the jet of fuel and to generate a first incomplete combustion, the gases originating from this first combustion still comprising at least a portion of the fuel, and the second jet of oxidizer (14) being injected at a distance from the jet of fuel in such a way as to combust with the portion of the fuel present in

the gases originating from the first combustion, wherein the primary jet of oxidizer being divided into two primary jets:

a) a first primary jet (5) of oxidizer, called a central primary jet, injected in a center of the jet of fuel along an axis of the jet of fuel; and

b) a second primary jet (7) of oxidizer, called a sheathing primary jet, injected coaxially around the jet of fuel.

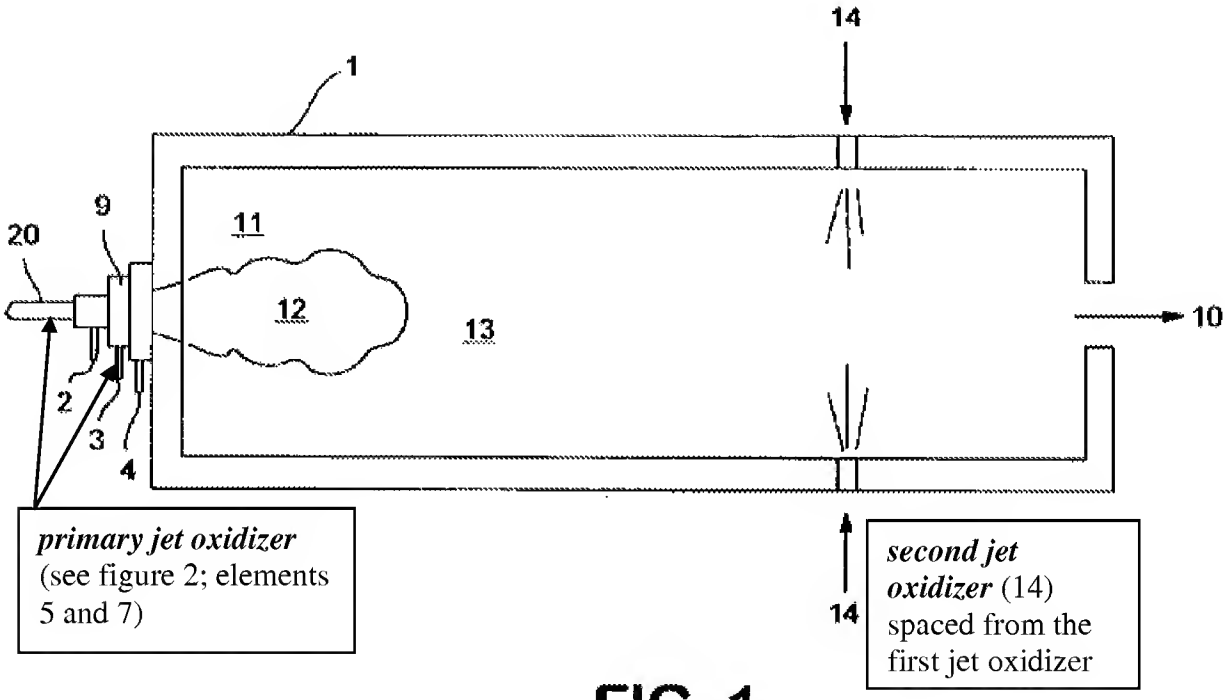


FIG. 1

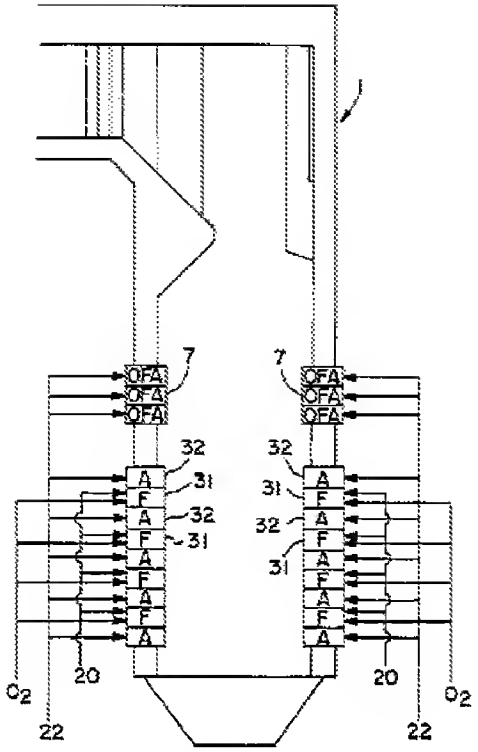

OFA
A
F
32
31
20
22
O_2

FIG. 7a

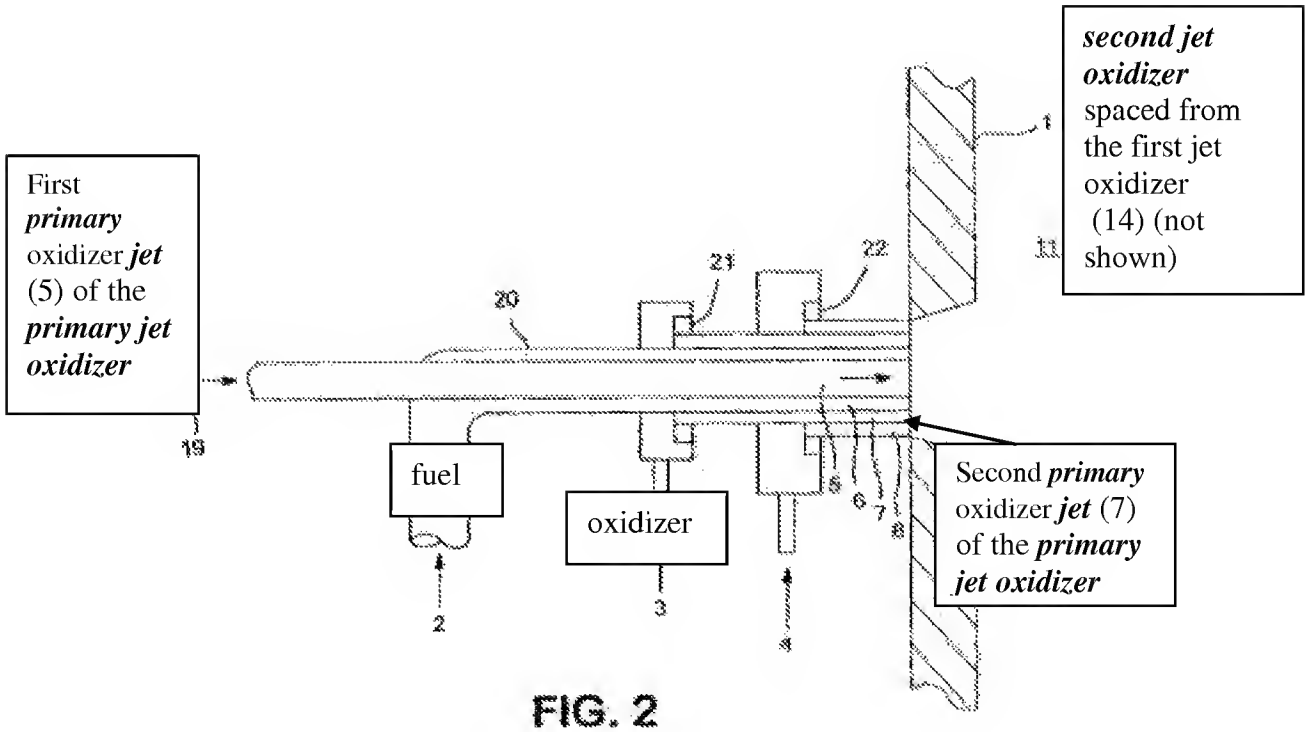

First *primary* oxidizer *jet* (5) of the *primary jet oxidizer*
second jet oxidizer spaced from the first jet oxidizer (14) (not shown)
Second *primary* oxidizer *jet* (7) of the *primary jet oxidizer*
fuel
oxidizer
20
21
22
19
2
3
4

FIG. 2

US 6422041 (Simpson et al) shows (figure 5) and discloses a method of combustion in a glass furnace including primary jet of oxidizer divided into a first primary central oxidizer jet (42) which is central to fuel jet (40), and a second primary sheathing primary jet (42).

US 6422041 (Simpson et al) also shows and discloses a second jet of oxidizer (42, 60) located at a distance from the jet of fuel. See the annotated figure 5 of **US 6422041 (Simpson et al)** herein below).

US 6422041 (Simpson et al) also shows and discloses

(7) The at least one oxygen-fuel burner requires fuel and an oxidant. **The fuel can be either gaseous or liquid or combinations of both. Gaseous fuels include natural gas (methane), towns gas, producer gas, LPG, propane, butane and blends of the aforementioned gases. Liquid fuels include heavy, medium and light fuel oils, kerosene and diesel.** Liquid fuels require to be atomized and/or vaporized. The atomization can be either by mechanical means or a secondary atomizing mediums which include air, steam, oxygen, any of the aforementioned gaseous fuels and in some cases an inert gas. Vaporization relies on the heat of the surrounding products of combustion gases to evaporate the oil. The **oxidant can be either 100% pure oxygen or a blend of oxygen and inert gas with an oxygen concentration 40-100%.** Referring to FIG. 5, **the at least one oxygen-fuel burner 34 within the roof 22 of the glass melting furnace 10 has at least one fuel conduit 40 for providing fuel and at least one oxygen conduit 42 for providing oxygen flow.** The oxygen-fuel burner 34 may have a capacity ranging from about 1-15 MM Btu/hr depending upon the glass melting furnace 10 size and desired pull rate. The oxygen-fuel burner 34 is designed to use **a higher percentage of oxygen than is present in air** and thus the temperature above the area of impingement of the flame 36 from the oxygen-fuel burner 34 is substantially higher than in a conventional glass melting furnace utilizing air-fuel burners. Notwithstanding, **as well known to one skilled in the art the temperature of the flame 36 imparted by an oxygen-fuel burner 34 is dependent on the quality of the fuel and the oxygen/fuel ratio**. In a preferred embodiment**, the oxygen concentration of the oxygen-fuel burner 34 is typically at a level of about 95-125 percent of the stoichiometric amount of oxygen required to combust the fuel.** The fuel **to oxygen ratio can be varied, however, to produce a range of operating conditions** in the glass melting furnace 10 to effect one or more desired properties, including, **for example, redox level, glass color, the level of gaseous bubbles known as seeds in the trade and other glass properties.**

US 6422041 (Simpson et al) shows:

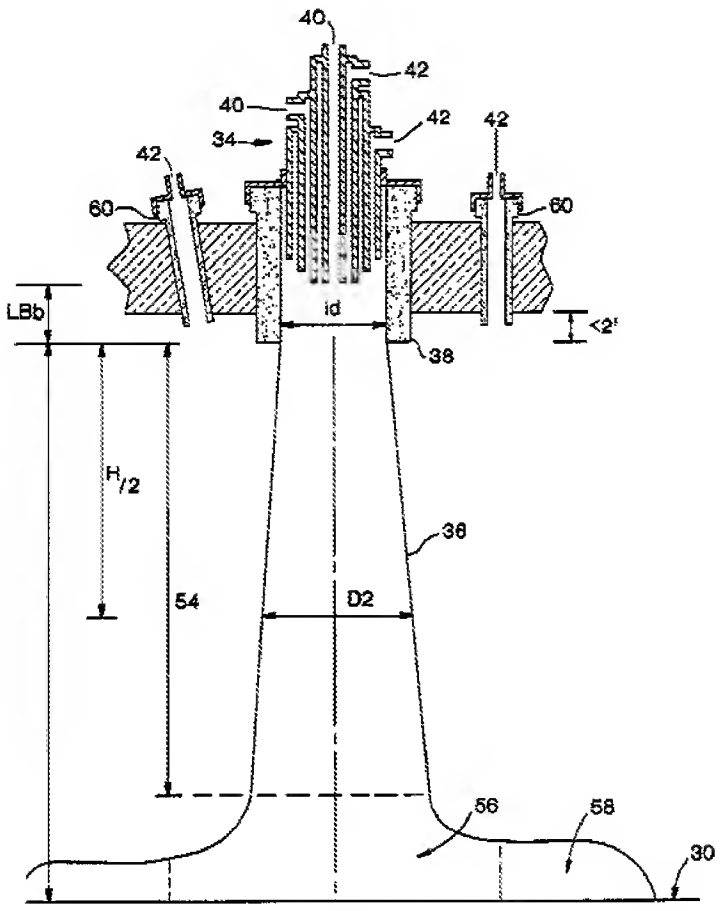


FIG. 5

US 6978726 (Kobayashi et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

- wherein the primary jet of oxidizer representing between 2% and 50% of a total quantity of oxidizer combusted; and
- the claimed velocity of the fuel and oxidant(s), the concentration of the various oxidants and the relative spacing of the burner components.

US 6422041 (Simpson et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

- wherein the primary jet of oxidizer representing between 2% and 50% of a total quantity of oxidizer combusted; and

- the claimed velocity of the fuel and oxidant(s), the concentration of the various oxidants and the relative spacing of the burner components.

EP 0 748 981 (Chamberland et al) teaches, from applicant's same staged oxidizer combustion method field of endeavor, a combustion method which utilizes gaseous and liquid fuels (e.g. –natural gas and oil) and wherein the primary jet of oxidizer representing between 2% and 50% (i.e. - "within the range of from **5** to **50** percent of stoichiometric") of a total quantity of oxidizer combusted, in order to reduce the formations of both nitrogen oxides and carbon monoxides.

EP 0 748 981 (Chamberland et al) includes a jet of fuel (2) and at least two jets of oxidizer are injected, the first jet of oxidizer (3), called the primary jet, being injected so as to be in contact with the jet of fuel and to generate a first incomplete combustion, the gases originating from this first combustion still comprising at least a portion of the fuel, and the second jet (6, 7, 8) of oxidizer being injected at a distance from the jet of fuel in such a way as to combust with the portion of the fuel present in the gases originating from the first combustion.

EP 0 748 981 (Chamberland et al) discloses and shows:

"The fuel and primary oxidant are provided into furnace **1** at flow rates such that the stoichiometric ratio of primary oxygen to fuel is less than **90** percent and preferably is within the range of from **5** to **50** percent of stoichiometric."

EP 0 746 981 A2

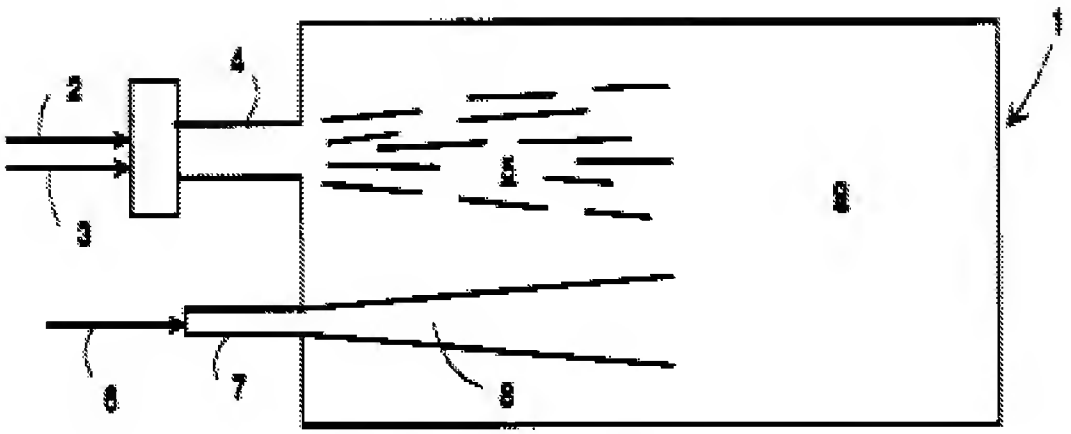


Fig. 1

US 5439373 teaches, from applicant's same staged oxidizer combustion method field of endeavor, wherein the primary jet of oxidizer representing between 2% and 50% (i.e. - "preferably from 15 to 25 percent of stoichiometric") of a total quantity of oxidizer combusted, in order to reduce the formations of both nitrogen oxides and carbon monoxides.

US 5439373 includes a jet of fuel (7) and at least two jets of oxidizer are injected, the first jet of oxidizer (10), called the primary jet, being injected so as to be in contact with the jet of fuel and to generate a first incomplete combustion, the gases originating from this first combustion still comprising at least a portion of the fuel, and the second jet (13) of oxidizer being injected at a distance from the jet of fuel in such a way as to combust with the portion of the fuel present in the gases originating from the first combustion.

US 5439373 shows and discloses:

(5) Oxygen is provided into first compartment 3 such as through conduit 9. The oxygen may be provided in the form of technically pure oxygen, i.e., a fluid comprising 99.5 percent or more oxygen, or in the form of oxygen-enriched air, such as a fluid having an oxygen concentration of 30 percent or more. Preferably the oxygen is provided in the form of a fluid having an oxygen concentration of at least 90 percent. **The oxygen is provided into the first compartment in an amount** from about 10 to 30 percent, **preferably from 15 to 25 percent of stoichiometric,** i.e., **of the amount of oxygen required to completely combust the fuel provided into the first compartment.** It is important that the amount of oxygen provided into the first compartment not exceed about 30 percent of stoichiometric in order to achieve the advantageous results of the invention. This aspect of the invention will be discussed in greater detail below. (Highlighting and Underlining Added)

U.S. Patent Aug. 8, 1995 Sheet 1 of 2 5,439,373

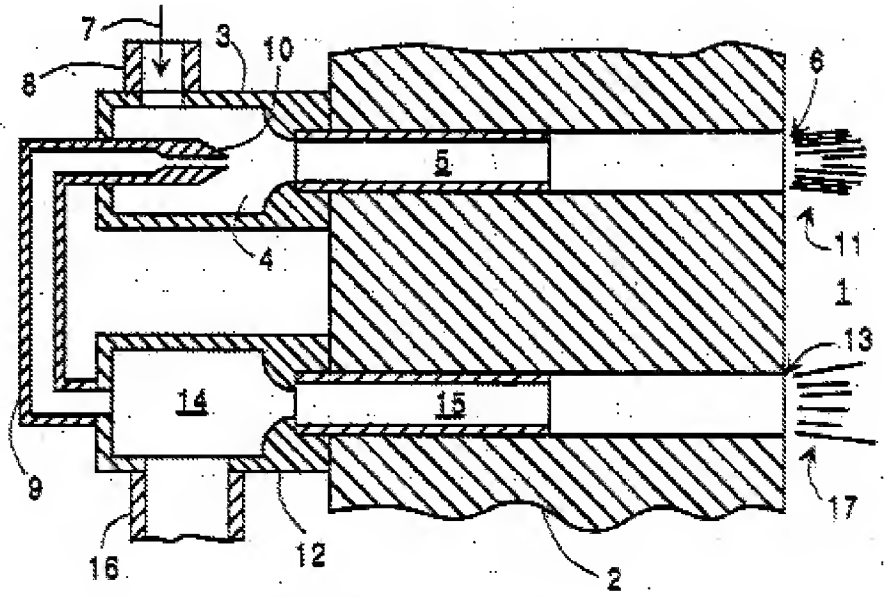


Fig. 1

In regard to **claims 12 -21**, for the purpose of reducing the formations of both nitrogen oxides and carbon monoxides, it would have been obvious to a person having ordinary skill in the art to modify the primary jet oxidizer to introduce the primary oxidant of **US 6978726 (Kobayashi et al)** or **US 6422041 (Simpson et al)** in a manner representing between 2% and 50% of a total quantity of oxidizer combusted and to arrange the second jet oxidizer to be located adjacent to and at a distance from the first jet oxidizer to introduce combustion completing oxidant into the furnace chamber and to operate with alternative fluid fuels such as natural gas and oil, in view of the teaching of **EP 0 748 981 (Chamberland et al)** or **US 5439373.**

In regard to **claims 13-16** and **18-21**, since the velocity of he fuel and oxidant(s), the concentration of the various oxidants, the relative spacing of the for a given burner and/or furnace would necessarily depend on numerous interrelated design concerns such as, the overall size and shape of the burner and/or furnace, the type of fuel combusted, etc., to operate the **US 6978726 (Kobayashi et al) or US 6422041 (Simpson et al)** burner in the manner claimed can be viewed as nothing more than merely a matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record.

In regard to **claim 17, US 6978726 (Kobayashi et al)** alone shows and discloses a "third" jet of oxidizer (8, figure 2; or 32, figure 7A,7C) is injected at a point situated between the point of injection of the central primary jet (5, figure 2; or 20, figures 7A,7C) of oxidizer and the point of injection of the second oxidizing jet (14, figure 1; or 7, figures 7A,7C), in the direction of travel along the continuous furnace wall.

Further in this regard, applicant's attention is directed to the following annotate figures of **US 6978726 (Kobayashi et al)**:

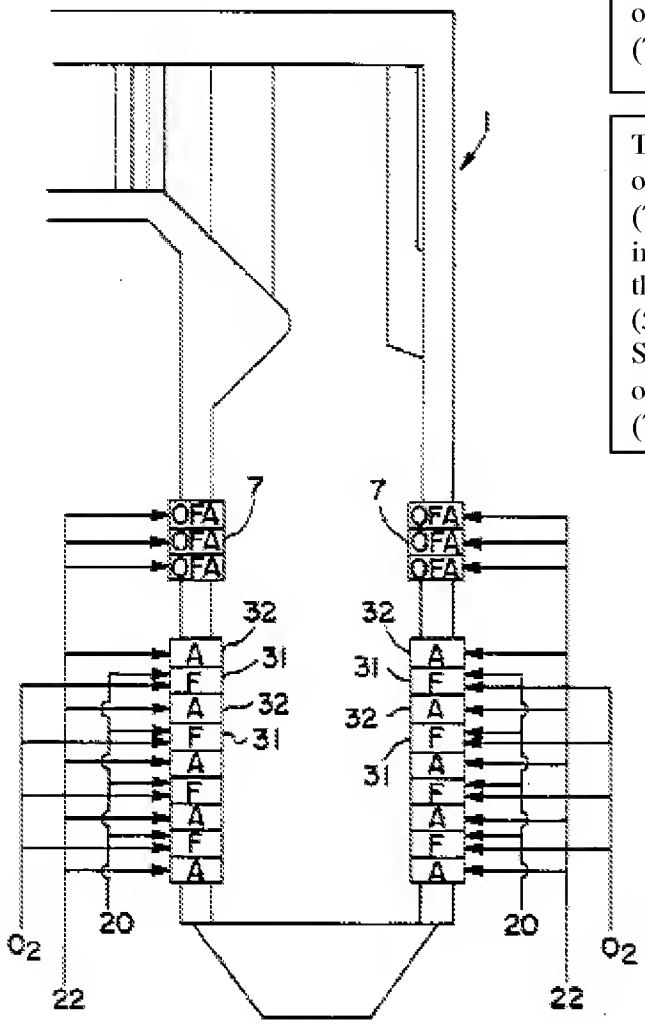


FIG. 7a

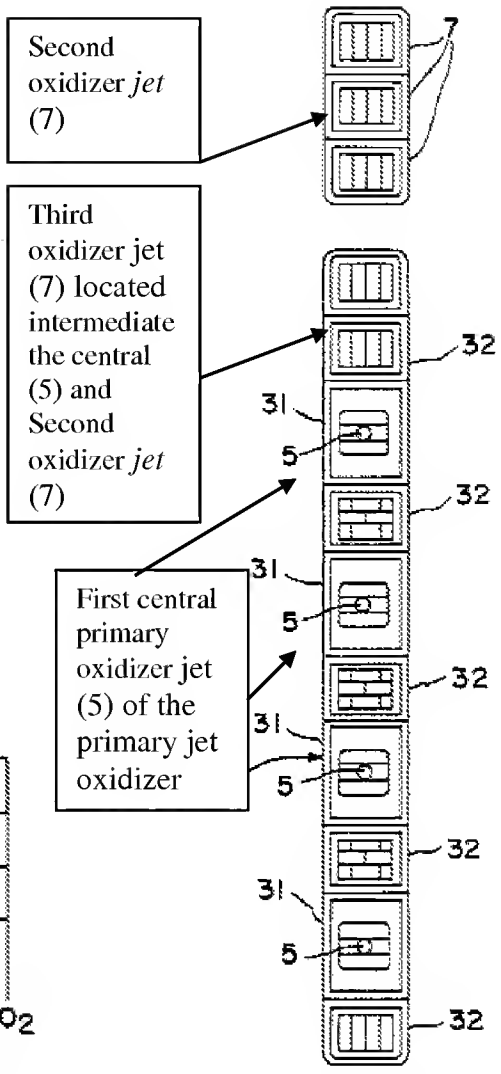


FIG. 7c

US 6978726 (Kobayashi et al) discloses:

> "(12) Referring to FIGS. 7A and 7C, a tangentially fired furnace 1 comprises an array of ports for injecting coal, and **ports for injecting combustion air**, into the furnace interior. Typically the coal ports and the combustion air ports are arrayed in a vertical row, alternating with each other, as is illustrated in FIGS. 7A and 7C wherein ports 31 for injecting coal alternate with ports 32 for injecting combustion air. The coal combusts in

> the furnace interior with the combustion air. The furnace is also equipped with **overfire air ports 7**.
>
> (13) The present invention is readily adapted to furnaces having this type of construction, for instance by **providing a lance 5 in one or more of the fuel ports** for which it has been determined that oxidant needs to be injected so as to reduce the carbon content of the ash that will be produced, and then feeding oxidant in the required amounts through each such lance. **Oxygen lances 5** can also be placed in **one or more of the combustion air ports or outside of the air and fuel ports,** and oxygen is injected from the lance(s) toward the adjacent coal stream." (Highlighting and Underlining Added)

Alternatively, regarding **claim 17**, for the purpose of reducing the formations of both nitrogen oxides and carbon monoxides, it would have been obvious to a person having ordinary skill in the art to modify **US 6422041 (Simpson et al)** such that the second jet oxidizer (14) is located on the same wall and at a distance from the burner which already has a first central jet oxidizer (5) and a third oxidizer (6) jet outwardly spaced therefrom, in view of the teaching of **US 6978726 (Kobayashi et al).**

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

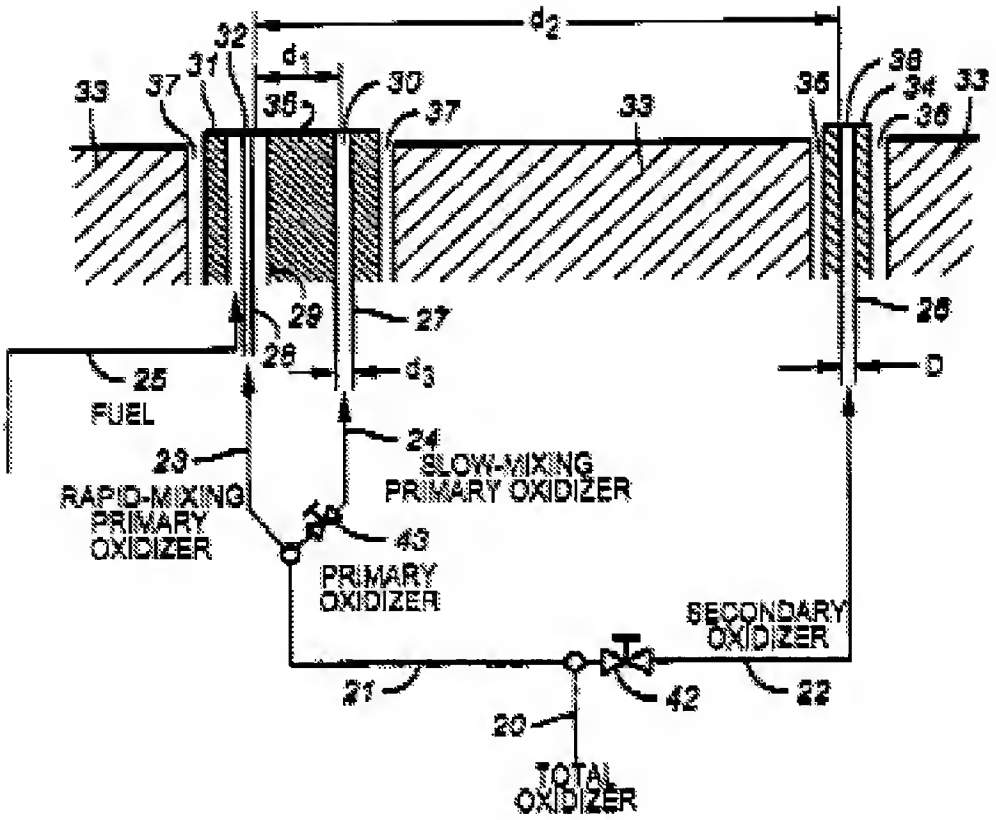
Claims 12-21 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **claims 1-49** of U.S. Patent No. **US 6910879 (Dugue et al)** in view of **US 6978726 (Kobayashi et al)** or **US 6422041 (Simpson et al).**

Applicant's claims	US 6910879 (Dugue et al)	Claim Comparison Notes
1. Claim 12	**Claim 1.**	
2. A method of fuel combustion,	0. A method of combustion in a furnace comprising the steps of:	
3. in which a jet of fuel and	1. injecting at least one fuel and	
4. ***at least two jets of oxidizer are injected,*** the first jet of oxidizer, called	2. at least one oxidizer separately, wherein said oxidizer comprises	
5. the primary jet, being injected so as to be in contact with the jet of fuel and to generate a first ***incomplete combustion***, the gases originating from this first combustion still comprising at least a	3. a primary oxidizer stream and	

portion of the fuel, and		(with regard to "***incomplete combustion***" of a primary jet with a jet of fuel, see this table column 2, line 10 (**US 6910879 (Dugue et al)**)
6. the second jet of oxidizer being injected at ***a distance*** from the jet of fuel	4. a secondary oxidizer stream,	
7. in such a way as to combust with the portion of the fuel present in the gases originating from the first combustion,		
8. wherein the primary jet of oxidizer is ***divided into two primary jets***:	5. wherein said primary oxidizer stream is further divided into ***at least two portions***, wherein	(with regard to "***a distance***" from the jet of fuel, see this table column 2, line 11 (**US 6910879 (Dugue et al)**)
9. a first primary jet of oxidizer, called a central primary jet, injected in the center of the jet of fuel; and	6. the first is a rapid-mixing stream and	
10. b) a second primary jet of oxidizer, called a sheathing primary jet,	7. the second is a slow-mixing stream;	
	8. ii) injecting the first rapid-mixing stream ***close to the fuel*** whereby generating a first ***incomplete combustion*** rapidly;	
	9. iii) injecting the second slow-mixing stream at ***a distance*** $\mathbf{d_1}$ from said first rapid-mixing stream, whereby the mixing of fuel and oxidizer occurs less	

	rapidly than that of the first incomplete combustion; and 10. iv) injecting said secondary oxidizer stream downstream from said primary oxidizer stream whereby entering into combustion with the portion of fuel that is diluted by the unreactive gases from the first incomplete combustion.	
11. injected coaxially around the jet of fuel. 12. **wherein the primary jet of oxidizer representing between 2% and 50% of a total quantity of oxidizer** combusted.	**Claim 10**. The method according to **claim 1**, wherein the total amount of said injected oxidizer comprises: a. a secondary oxidizer from about 50% to about 90%; and b. **a primary oxidizer from about 10% to about 50%.**	

US 6910879 (Dugue et al) shows (figure 3a) and discloses a method of combustion in a furnace including primary jet of oxidizer (31), a second jet of oxidizer (38) and a tertiary jet of oxidizer (30) located at a distance from the jet of fuel. And, wherein the primary jet of oxidizer includes a first primary central oxidizer jet (32) axially aligned with the fuel jet (29). And, wherein the primary oxidizer from about 10% to about 50% (see claim 10).



US 6910879 (Dugue et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

- a second primary sheathing primary jet coaxial with the fuel jet.

US 6978726 (Kobayashi et al) shows and discloses a method of fuel combustion, in which:

- a jet of fuel (6) and at least two jets of oxidizer are injected, the first jet of oxidizer, called the primary jet (5, 3), being injected so as to be in contact with the jet of fuel and to generate a first incomplete combustion, the gases originating from this first combustion still comprising at least a portion of the fuel, and the second jet of oxidizer (14) being injected at a distance from the jet of fuel in such a way as to combust with the portion of the fuel present in the gases originating from the first combustion, wherein the primary jet of oxidizer being divided into two primary jets:

a) a first primary jet (5) of oxidizer, called a central primary jet, injected in a center of the jet of fuel along an axis of the jet of fuel; and

b) a second primary jet (7) of oxidizer, called a sheathing primary jet, injected coaxially around the jet of fuel.

US 6422041 (Simpson et al) shows (figure 5) and discloses a method of combustion in a glass furnace including primary jet of oxidizer divided into a first primary central oxidizer jet (42) which is central to fuel jet (40), and a second primary sheathing primary jet (42). **US 6422041 (Simpson et al)** also shows and discloses a second jet of oxidizer (42, 60) located at a distance from the jet of fuel. See the annotated figure 5 of **US 6422041 (Simpson et al)** herein below).

In regard to **claims 12 -21**, for the purpose of reducing the formations of both nitrogen oxides and carbon monoxides, it would have been obvious to a person having ordinary skill in the art to modify the primary oxidizer flow of **US 6910879 (Dugue et al)**, ***presently*** in the form of a central primary oxidant jet (28) directing a primary oxidant jet ***along an axis of the jet of fuel*** (25), to include an additional ***second primary*** jet of oxidizer, or sheathing primary jet, injected coaxially around the jet of fuel, in view of the teaching of **US 6978726 (Kobayashi et al) or US 6422041 (Simpson et al).**

In regard to **claims 13- 21**, since the velocity of he fuel and oxidant(s), the concentration of the various oxidants, the relative spacing of the for a given burner and/or furnace would necessarily depend on numerous interrelated design concerns such as, the overall size and shape of the burner and/or furnace, the type of fuel combusted, etc., to operate the **US 6910879 (Dugue et al)** burner in the manner claimed can be viewed as nothing more than merely a matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record.

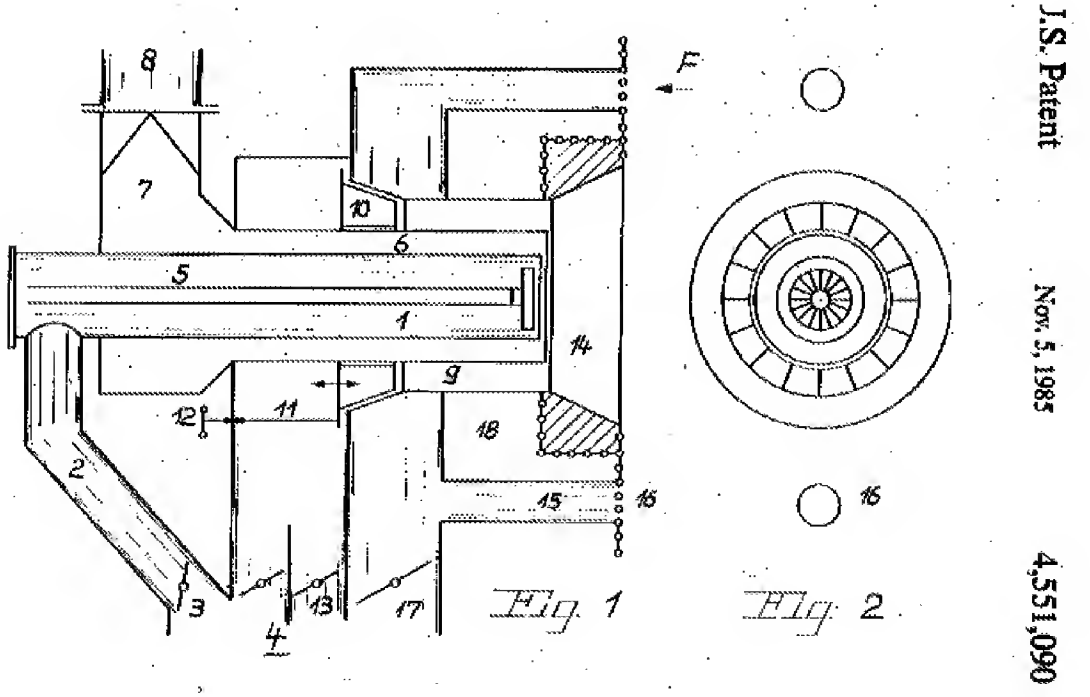
Conclusion

See the previously cited and currently attached USPTO for, 892 for prior art made of record and not relied upon which is considered pertinent to applicant's disclosure.

US 5178533 Collenbusch:

(18) It is true that such a central flame heart is also present in principle in the known burners, whilst, according to the present invention, this central dead zone is provoked deliberately and enlarged, more particularly by the fact that the least primary air possible is supplied in this zone.
(19) However, even if it is not provided in the first place for combustion, a small proportion of primary air may be supplied in this central zone, this small proportion of primary air serving, however, in the first place to stabilize the flame and to prevent a rearward return of the combustion gases, the coal ash and the coke, which, without that, would lead to the soiling of the central part of the nozzle.
(20) A small stream of **primary air in this central zone, which is below 20% and preferably below 10% of the total primary air,** avoids such a rearward return of the combustion products, without supplying much oxygen which would reduce the central zone rich in fuel.

US 4551090 shows:



US 6699029 (Kobayashi et al):

US 6699029 (Kobayashi et al) shows and discloses a primary oxidizer jet formed of a first oxidizer jet (5) located central to a fuel jet (20) and a second oxidizer jet (15, 16) coaxial with the fuel jet, and a secondary jet of oxidizer (7) injected a distance from the primary oxidizer and fuel jets.

US 6699029 (Kobayashi et al) shows:

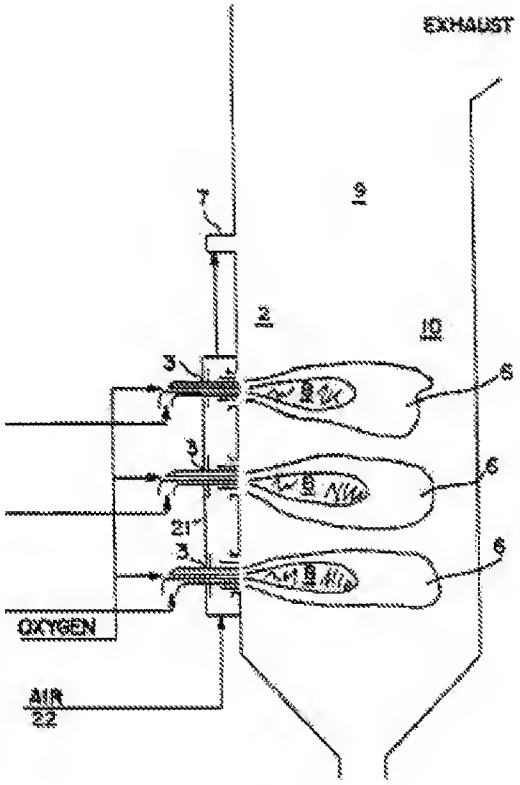


FIG. 1

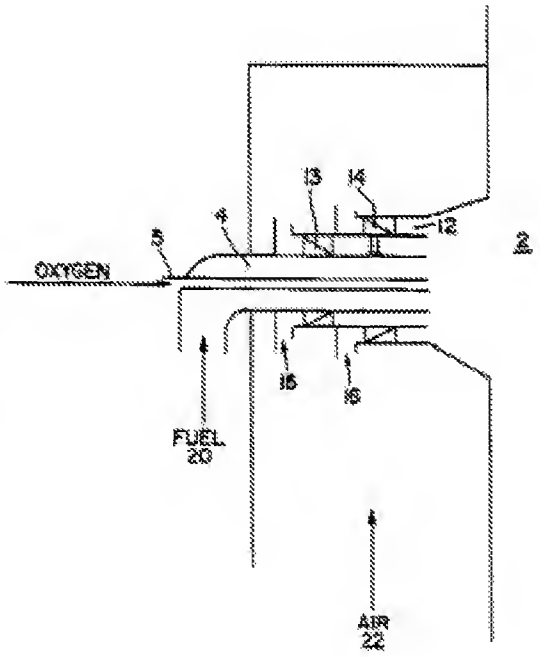


FIG. 2

THIS ACTION IS MADE FINAL

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

USPTO CUSTOMER CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carl D. Price whose telephone number is (571) 272-4880. The examiner can normally be reached on Monday through Friday between 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven B. McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carl D. Price/
Primary Examiner, Art Unit 3749

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